

TOOL BOX TRAY STRUCTURE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a tool box tray structure, and more particularly to a tool box tray structure made of different colors of PET plates which are worked by a secondary heat press process to form the tool box tray structure having different colors, thereby facilitating the user identifying the kinds of the hand tools by the color contrast.

2. Description of the Related Art

A conventional tool box comprises a main body consisting of a top cover and a bottom cover, and a tool box tray mounted on the main body and located between the top cover and the bottom cover for storing hand tools of different types. However, the tool box tray only has a single color, so that the user cannot identify the size and type of the hand tool by the color of the tool box tray, thereby causing inconvenience to the user in identification.

SUMMARY OF THE INVENTION

The primary objective of the present invention is to provide a tool box tray structure that has a double-color molded recess having a first color provided by the one-color tray and a second color provided by the PET plate.

Another objective of the present invention is to provide a tool box tray structure, wherein the PET plate is bonded on the first receiving recesses and the second receiving recesses of the molded recess, and the size indication

zones of the molded recess is formed by the one-color tray so as to provide a color contrast, thereby facilitating the user identifying the kinds of the hand tools by the color contrast of the one-color tray and the PET plate having different colors.

5 A further objective of the present invention is to provide a tool box tray structure, wherein the tool box tray structure is made of the PET material having a greater tensile strength and a greater bending strength to enhance the strength of the molded recess, so that the tool box tray structure can be used to support heavier hand tools.

10 A further objective of the present invention is to provide a tool box tray structure, wherein each of the size indication zones of the molded recess is provided with a size indication mark, so that the user can identify the size of the hand tool by the color of each of the size indication zones of the molded recess and by the size indication mark of the respective size indication zone.

15 In accordance with the present invention, there is provided a tool box tray structure, comprising:

 a molded recess for mounting hand tools of different types;

 the molded recess including a first layer having a first color and a second layer having a second color bonded on the first layer.

20 Further benefits and advantages of the present invention will become apparent after a careful reading of the detailed description with appropriate reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a schematic plan cross-sectional view showing the forming process of a tool box tray structure in accordance with the preferred embodiment of the present invention;

5 Fig. 2 is a schematic plan cross-sectional view showing the forming process of the tool box tray structure in accordance with the preferred embodiment of the present invention;

 Fig. 3 is a schematic plan cross-sectional view showing the forming process of the tool box tray structure in accordance with the preferred
10 embodiment of the present invention;

 Fig. 4 is a schematic plan cross-sectional view showing the forming process of the tool box tray structure in accordance with the preferred embodiment of the present invention;

 Fig. 5 is a perspective view of the tool box in accordance with the
15 preferred embodiment of the present invention;

 Fig. 6 is a partially cut-away perspective view of the tool box tray structure in accordance with the preferred embodiment of the present invention;

 Fig. 6A is a partially enlarged view of the tool box tray structure as
20 shown in Fig. 6;

Fig. 7 is a schematic plan cross-sectional view showing the forming process of a tool box tray structure in accordance with another embodiment of the present invention;

Fig. 8 is a partially cut-away perspective view of the blank of the tool box tray structure in accordance with another embodiment of the present invention;

Fig. 9 is a schematic plan cross-sectional view showing the forming process of a tool box tray structure in accordance with another embodiment of the present invention;

Fig. 10 is a schematic plan cross-sectional view showing the forming process of a tool box tray structure in accordance with another embodiment of the present invention;

Fig. 11 is a schematic plan cross-sectional view showing the forming process of a tool box tray structure in accordance with another embodiment of the present invention; and

Fig. 12 is a partially cut-away perspective view of the tool box tray structure in accordance with another embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawings and initially to Figs. 5 and 6, a tool box in accordance with the preferred embodiment of the present invention comprises a main body 1, and a tool box tray structure 10 mounted on the main body 1.

The tool box tray structure 10 is formed with a double-color molded recess 3 for mounting hand tools of different types.

The molded recess 3 includes a plurality of first receiving recesses 31 each having the shape of a screwdriver handle for receiving a screwdriver handle 40, a plurality of second receiving recesses 32 each having the shape of a screwdriver shank for receiving a screwdriver shank 41, and a plurality of size indication zones 33 for indicating the size of the screwdriver shank 41.

The tool box tray structure 10 is preferably made of PET (polyethylene terephthalate) material having a greater tensile strength (500kgf/cm²) and a greater bending strength (700kgf/cm²). In addition, the tool box tray structure 10 is formed by a heat press process.

Referring to Figs. 1-4 with reference to Figs. 5 and 6, the tool box tray structure 10 is manufactured by the following methods.

First of all, a first PET plate 20 is placed into a first forming mold 30. The first forming mold 30 is formed with the molded recess 3 including a plurality of first receiving recesses 31 each having a size slightly greater than that of the screwdriver handle 40, a plurality of second receiving recesses 32 each having a size slightly greater than that of the screwdriver shank 41, and a plurality of size indication zones 33 for indicating the size of the screwdriver shank 41. Then, the first forming mold 30 is closed and heated to a predetermined temperature, so that the first PET plate 20 placed in the first forming mold 30 is softened and is bonded in the molded recess 3 of the first

forming mold 30 as shown in Fig. 1, thereby forming a one-color tray 11 (see Fig. 2). Then, the one-color tray 11 is cooled and removed from the molded recess 3 of the first forming mold 30.

Then, the one-color tray 11 is placed into a second forming mold 50
5 having the same form as that of the one-color tray 11 as shown in Fig. 2. Then, a second PET plate 21 is placed into the second forming mold 50 and is rested on the one-color tray 11. The second PET plate 21 has a color different from that of the one-color tray 11. Then, the second forming mold 50 is closed and heated to a predetermined temperature as shown in Fig. 3, so that the second
10 PET plate 21 placed in the second forming mold 50 is softened and is bonded in the molded recess 3 of the one-color tray 11 as shown in Figs. 3 and 4, thereby forming a double-color tool box tray structure 10 as shown in Fig. 4. Then, the double-color tool box tray structure 10 is cooled and removed from the second forming mold 50.

15 In such a manner, as shown in Figs. 4-6, the tool box tray structure 10 includes a one-color tray 11, and a PET plate 21 mounted on the one-color tray 11 and having a color different from that of the one-color tray 11. Thus, the tool box tray structure 10 has a double-color molded recess 3 having a first color provided by the one-color tray 11 and a second color provided by the PET plate
20 21. Preferably, the PET plate 21 is bonded on the first receiving recesses 31 and the second receiving recesses 32 of the molded recess 3, and the size indication zones 33 of the molded recess 3 is formed by the one-color tray 11 so as to

provide a color contrast, thereby facilitating the user identifying the kinds of the hand tools by the color contrast of the one-color tray 11 and the PET plate 21 having different colors.

In addition, the tool box tray structure 10 is made of the PET material
5 having a greater tensile strength and a greater bending strength to enhance the strength of the molded recess 3, so that the tool box tray structure 10 can be used to support heavier hand tools.

Further, each of the size indication zones 33 of the molded recess 3 is provided with a size indication mark 34 (see Fig. 6A), so that the user can
10 identify the size of the hand tool by the color of each of the size indication zones 33 of the molded recess 3 and by the size indication mark 34 of the respective size indication zone 33.

Referring to Figs. 7-12, a tool box tray structure 10A in accordance with another embodiment of the present invention is shown, wherein the
15 construction of the tool box tray structure 10A is substantially similar to that of the tool box tray structure 10, and the difference therebetween is described as follows.

As shown in Fig. 7, the first PET plate 20A has a plurality of hollow portions to mate with the molded recess 3, so that after the one-color tray 11A
20 is formed, the molded recess 3 of the one-color tray 11A has a hollow bottom as shown in Fig. 9. Then, the one-color tray 11A is placed into the second forming mold 50 having the same form as that of the one-color tray 11 as

shown in Fig. 9. Then, the second PET plate 21 is placed into the second forming mold 50 and is rested on the one-color tray 11A. Then, the second forming mold 50 is closed and heated to a predetermined temperature as shown in Fig. 10, so that the second PET plate 21 placed in the second forming mold 50 is softened and is bonded in the molded recess 3 of the one-color tray 11A as shown in Fig. 10, thereby forming a double-color tool box tray structure 10A as shown in Figs. 11 and 12. Then, the double-color tool box tray structure 10A is cooled and removed from the second forming mold 50.

Although the invention has been explained in relation to its preferred embodiment(s) as mentioned above, it is to be understood that many other possible modifications and variations can be made without departing from the scope of the present invention. It is, therefore, contemplated that the appended claim or claims will cover such modifications and variations that fall within the true scope of the invention.